

REMARKS

35 USC §112

Claims 20, 24-26, 30 and 32-36 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Applicant respectfully disagrees.

The Original Specification, page 8, describes the “solvent mixture” as: “the solvent mixture generally comprises at least one solvent (*i.e.*, a composition that breaks down and/or dissolves the spin-on film, also referred to as active component) and at least one non-solvent (*i.e.*, a composition that is inert to the spin-on film or that breaks down and/or dissolves the spin-on film at a rate of at least 10 times less than the solvent).”. Therefore, the active component is also referred to as the solvent in the description, so there is a solvent in the “solvent mixture”.

35 USC §102

Claims 20, 26, 32, 34 and 36 are rejected under 35 USC 102(e) as being anticipated by Huang et al. (US 6,485,576). The Applicant respectfully disagrees.

Claim 20 recites:

“A method of removing a spin-on compound, comprising:

spin-depositing a spin-on compound on a surface of a substrate, wherein the spin-on compound comprises silicon;

providing a solvent mixture, wherein the solvent mixture comprises an active solvent component and at least one non-solvent component; and

spin-rinsing the spin-on compound with a solvent mixture, wherein the solvent mixture comprises the active solvent component dissolves the spin-on compound, and the non-solvent component is inert to the spin-on compound.”

The Huang reference discloses “suitable cleaning solutions” for cleaning SOG or photoresist material from a wafer flat side, such that “a build up of the coating material and possible cracking in subsequent processing steps can be prevented.” (See Column 3, lines 21-26). In addition, Huang teaches that “suitable cleaning solutions” is a mixture of EL-100 and isopropyl alcohol. Huang also admits that other solvents may be used as long as “a desirable viscosity range and flow properties of the mixture can be achieved.” The only requirement disclosed in Huang as to solvent properties is that they are suitably mixed “such that a desirable viscosity or flow property of the mixture can be obtained to carry out the present invention method”. There is no requirement that one of the components of the solvent mixture be an “active solvent component” which breaks down and/or dissolves the material and that the other component be a non-solvent component that is inert and/or does not break down the material.

In addition, Huang does not teach all of the claimed elements of the present application.

“Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration.” *W. L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundscriber Corp. v. United States*, 360 F.2d 954, 148 USPQ 298, 301 (Ct. Cl.), *adopted*, 149 USPQ 640 (Ct. Cl. 1966)) Further, the prior art reference must disclose each element of the claimed invention “**arranged as in the claim**”. *Lindermann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)). Huang does not teach a composition that breaks down and/or dissolves the spin-on film, also referred to as active component. Based on this argument, along with others such as that discussed above, Huang does not anticipate claim 20 of the present application because Huang is lacking and/or missing at least one specific feature or structural recitation found in the present application, and in claim 20. Claim 20 is therefore allowable as not being anticipated by Huang. Further, Huang does not anticipate claims 26, 32, 34 and 36 of the present application by virtue of their dependency on claim 20.

Claims 20 and 33-34 are rejected under 35 USC 102(e) as being anticipated by Leung et al. (US 6,444,495). The Applicant respectfully disagrees. A Declaration under 37 CFR 1.132 is provided herein that shows that Denis Endisch invented the subject matter disclosed in the patent that is relied on in the rejection. Based on this Declaration, claims 20 and 33-34 are allowable as not being properly anticipated by Leung et al.

35 USC §103

Claims 33 and 35 are rejected under 35 USC 103(a) as being obvious over Huang et al. (US 6,485,576) in view of Yoshida et al. (US 6,534,595). The Applicant respectfully disagrees.

Claim 20 recites:

“A method of removing a spin-on compound, comprising:

spin-depositing a spin-on compound on a surface of a substrate, wherein the spin-on compound comprises silicon;

providing a solvent mixture, wherein the solvent mixture comprises an active solvent component and at least one non-solvent component; and

spin-rinsing the spin-on compound with a solvent mixture, wherein the solvent mixture comprises the active solvent component dissolves the spin-on compound, and the non-solvent component is inert to the spin-on compound.”

The Huang reference discloses “suitable cleaning solutions” for cleaning SOG or photoresist material from a wafer flat side, such that “a build up of the coating material and possible cracking in subsequent processing steps can be prevented.” (See Column 3, lines 21-26). In addition, Huang teaches that “suitable cleaning solutions” is a mixture of EL-100 and isopropyl alcohol. Huang also admits that other solvents may be used as long as “a desirable viscosity range and flow properties of the mixture can be achieved.” The only requirement disclosed in Huang as to solvent properties is that they are suitably mixed “such that a desirable viscosity or flow property of the mixture can be obtained to carry out the present invention method”. There is no requirement that one of the components of the solvent mixture be an “active solvent component” which breaks down and/or dissolves the material and that the other component be a non-solvent component that is inert and/or does not break down the material.

The Yoshida reference discloses coating solutions for forming porous organic films. Yoshida does contemplate utilizing propyl acetate; however Yoshida does not contemplate using these solvents on spin-on compounds comprising silicon. Yoshida states in Column 6, lines 23-38 that the solvent is chosen to be a compatibilizing agent to the components of the coating solutions, which are organic. Therefore, Yoshida does not mention using propyl acetate as a suitable solvent for spin-on materials comprising silicon. There is absolutely no teaching, motivation or suggestion in Yoshida that would lead one of ordinary skill in the art to combine with Huang to get the subject matter taught in the present application, especially in view of the paragraph in Column 6, lines 23-38 from the Yoshida reference. And, if there is no teaching, suggestion or motivation in either the Huang reference or the Yoshida references to combine them, then the present independent claims must be found in either one of the references, and that clearly is not the case based on the above arguments.

Therefore, based on the above arguments, claim 20 is patentable over the Huang reference in view of the Yoshida reference. In addition, claims 33 and 35 are patentable over the Huang reference in view of the Yoshida reference by virtue of their dependency on independent claim 20.

Claims 24-25 are rejected under 35 USC 103(a) as being obvious over Huang et al. (US 6,485,576) and Kalnitsky et al. (US 5,435,888). The Applicant respectfully disagrees.

Claim 20 recites:

“A method of removing a spin-on compound, comprising:

spin-depositing a spin-on compound on a surface of a substrate, wherein the spin-on compound comprises silicon;

providing a solvent mixture, wherein the solvent mixture comprises an active solvent component and at least one non-solvent component; and

spin-rinsing the spin-on compound with a solvent mixture, wherein the solvent mixture comprises the active solvent component dissolves the spin-on compound, and the non-solvent component is inert to the spin-on compound.”

The Huang reference discloses “suitable cleaning solutions” for cleaning SOG or photoresist material from a wafer flat side, such that “a build up of the coating material and possible cracking in subsequent processing steps can be prevented.” (See Column 3, lines 21-26). In addition, Huang teaches that “suitable cleaning solutions” is a mixture of EL-100 and isopropyl alcohol. Huang also admits that other solvents may be used as long as “a desirable viscosity range and flow properties of the mixture can be achieved.” The only requirement disclosed in Huang as to solvent properties is that they are suitably mixed “such that a desirable viscosity or flow property of the mixture can be obtained to carry out the present invention method”. There is no requirement that one of the components of the solvent mixture be an “active solvent component” which breaks down and/or dissolves the material and that the other component be a non-solvent component that is inert and/or does not break down the material.

Since Kalnitsky does not correct the deficiency of Huang and does not show motivation to combine Huang and Kalnitsky and does not itself refer to the use of a solvent mixture, wherein the solvent mixture comprises an active component and at least one non-solvent component, Kalnitsky cannot be combined with the Huang references to arrive at the subject matter of the present invention.

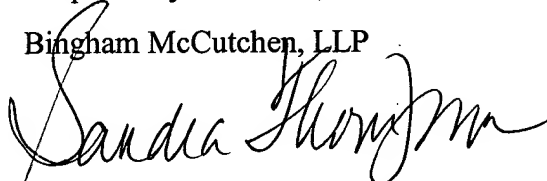
Therefore, based on the above arguments, claim 20 is patentable over the Huang reference in view of the Kalnitsky reference. In addition, claims 24 and 35 are patentable over the Huang reference in view of the Kalnitsky reference by virtue of their dependency on independent claim 20.

REQUEST FOR ALLOWANCE

Claims 20, 24-26, 30 and 32-36 are currently pending in this application, and the Applicant respectfully requests that the Examiner reconsider all of the claims in light of the arguments presented and allow all current and pending claims.

Respectfully submitted,

Bingham McCutchen, LLP



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By:

Sandra P. Thompson, PhD, JD

Reg. No. 46,264

E-mail: sandra.thompson@bingham.com

Direct Line: 714-830-0622

ATTORNEYS FOR APPLICANT(S):

Plaza Tower
600 Anton Boulevard, 18th Floor
Costa Mesa, CA 92626
Tel: 714-830-0622
Fax: 714-830-0722

Three Embarcadero Center
San Francisco, CA 94111
Tel: (415) 393-2000
Fax: (415) 393-2286